Eight-channel Darlington Drivers

FEATURES

Improved replacement for the ULN2803
Fast turn-on and turn-off.
TTL/CMOS compatible.

APPLICATIONS

- Stepping Motor Driver.
- Relay Driver.
- LED Driver.
- Solenoid Driver.

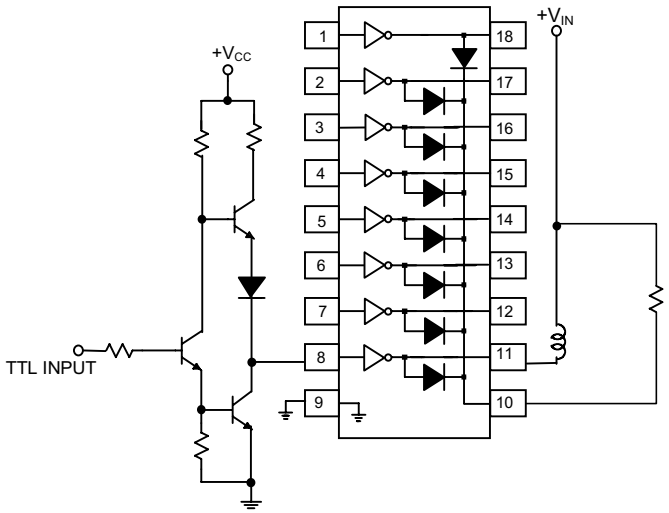
DESCRIPTION

Manufactured with the standard bipolar process, the SS62803 is a high-voltage, high-current 8-channel Darlington array, with each of the output transistors capable of sinking peak load current of 500mA and capable of withstanding at least 50V in the OFF state.

The SS62803 has a 2.7KΩ series base resistor to each Darlington pair and thus allows operation directly with TTL or CMOS logic circuitry operating at a supply voltage of 5V. Outputs of the drivers can be paralleled for higher load current capability. These make the SS62803 ideally suited for numerous interfaces between low-level logic circuitry and high-power peripheral loads, particularly those beyond the capabilities of standard logic buffers. Typical loads include relays, solenoids, stepping motors, heaters, multiplexed LED, and incandescent displays.

The SS62803 features open collector outputs and integral diodes for inductive load transient suppression.

TYPICAL APPLICATION CIRCUIT



Solenoid Driver

ORDERING INFORMATION

SS62803CXXX

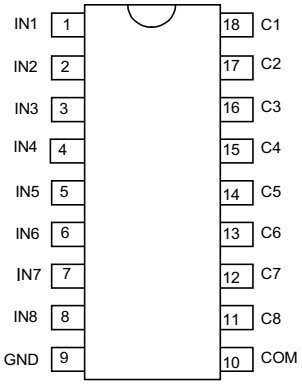
PACKING TYPE
TB: TUBE

PACKAGE TYPE
N:PLASTIC DIP

Example: SS62803CNTB
→ in DIP-18 Package & Tube Packing Type

PIN CONFIGURATION

DIP-18
TOP VIEW



ABSOLUTE MAXIMUM RATINGS (TA=25°C)

Output Voltage		50V
Input Voltage		30V
Continuous Collector Current		500mA
Continuous Base Current		25mA
Power Dissipation,	(One Darlington Pair)	1.0W
	(Total Package)	2.25W
Operating Ambient Temperature Range		-20°C~ 85°C
Storage Temperature Range		-65°C~ 150°C

ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified.)

PARAMETERS	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	V_{CE}=50V,T_A=25°C V_{CE}=50V,T_A=70°C, Fig. 1	I_{CEX}			30 100	µA
Collector-Emitter Saturation Voltage	I_C=100mA,I_B=250µA I_C=200mA,I_B=350µA I_C=350mA,I_B=500µA , Fig. 2	$V_{CE(SAT)}$		0.8 0.9 1.0	1.1 1.3 1.5	V
Input Current	V_{IN}=3.85V, Fig. 3 I_C=500µA,T_A=70°C, Fig. 4	$I_{IN(ON)}$ $I_{IN(OFF)}$	 50	0.93 65	1.35	mA µA
Input voltage	V_{CE}=2.0V, I_C=200mA V_{CE}=2.0V, I_C=250mA V_{CE}=2.0V, I_C=300mA, Fig. 5	$V_{IN(ON)}$			2.3 2.4 2.5	V
Input Capacitance		C_{IN}		15	25	pF
Clamp Diode Leakage Current	V_R=50V, T_A=25°C V_R=50V, T_A=70°C, Fig. 6	I_R			30 100	µA
Clamp Diode Forward Voltage	I_F=350mA Fig. 7	V_F		1.4	1.8	V
Turn-On Delay	0.5 V_{IN} to 0.5 V_{OUT}, Fig. 8	T_{ON}		0.1	0.5	µS
Turn-off Delay	0.5 V_{IN} to 0.5 V_{OUT}, Fig. 8	T_{OFF}		0.2	0.8	µS

TEST CIRCUITS

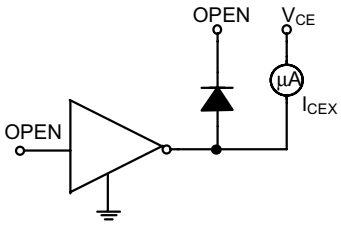


Fig. 1

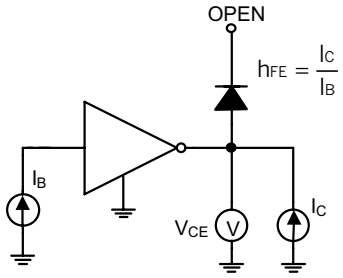


Fig. 2

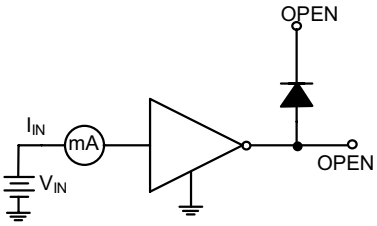


Fig. 3

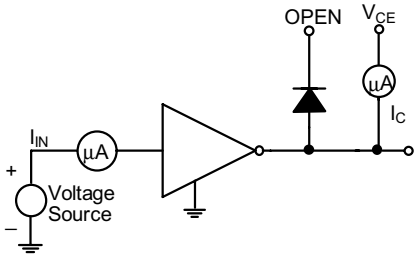


Fig. 4

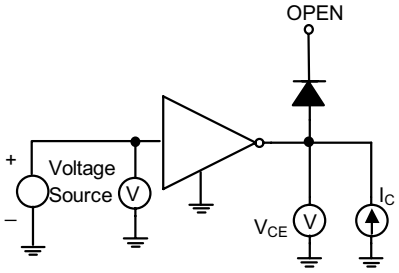


Fig. 5

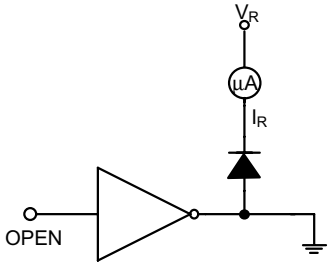


Fig. 6

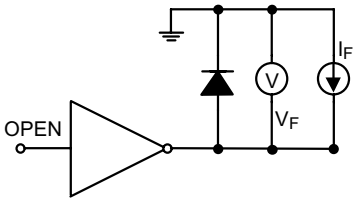


Fig. 7

TEST CIRCUITS (Continued)

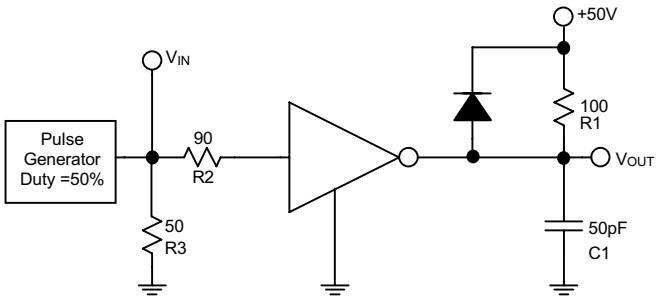


Fig. 8

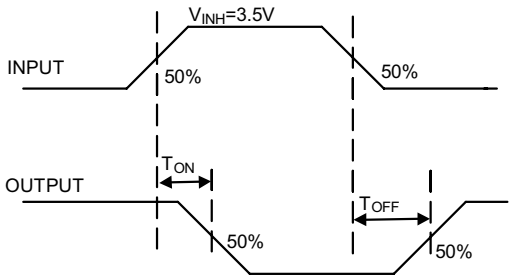


Fig. 9 Test Circuit of Fig. 8

PIN DESCRIPTIONS

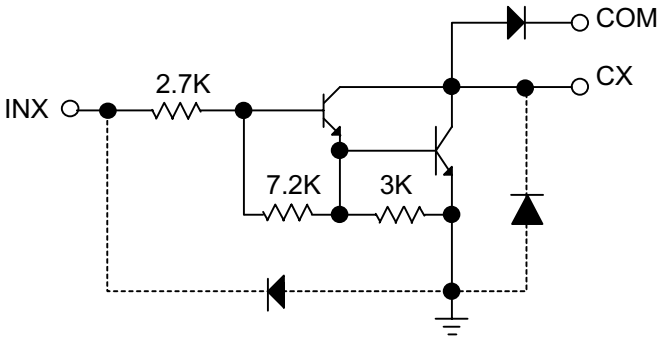
PIN 1~8: IN1~IN8 - Control signal input pin.

PIN 9: GND - Power ground.

PIN 10: COM - The output pin (Cathode) of freewheeling diode.

PIN 11~18: C1~C8 - Each of the pins may individually sink load current from some controlled circuits. The sunk current should be under 500mA in a continuous mode.

DRIVER CIRCUIT



SWITCHING DELAY

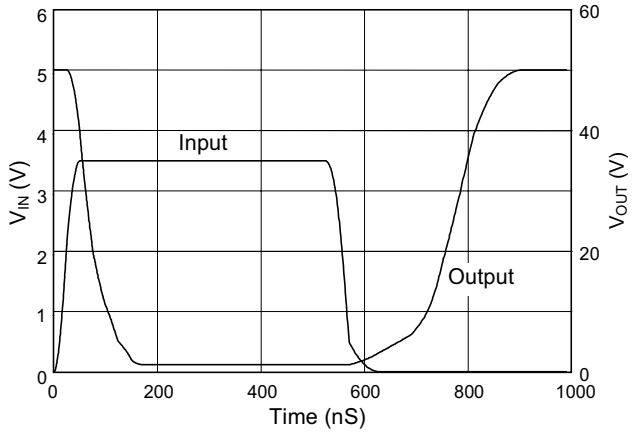


Fig. 10 Switching Delay

ALLOWABLE AVERAGE POWER DISSIPATION

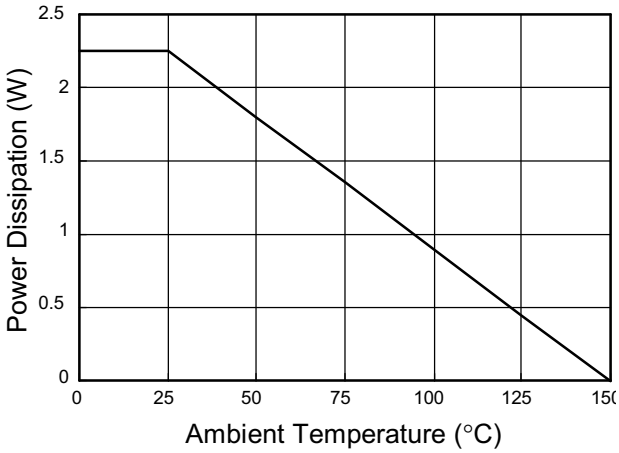
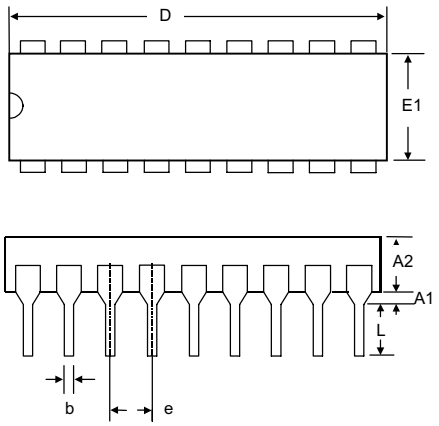
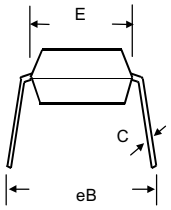


Fig. 11 Power Dissipation vs. Ambient Temperature

PHYSICAL DIMENSIONS

- **18 LEAD PLASTIC DIP (unit: mm)**





SYMBOL	MIN	MAX
A1	0.381	—
A2	2.92	4.96
b	0.35	0.56
C	0.20	0.36
D	22.35	23.37
E	7.62	8.26
E1	6.09	7.12
e	2.54 (TYP)	
eB	—	10.92
L	2.92	3.81